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THE DISTRIBUTION OF QUERCUS BOYNTONI

CORNELIUS H. MULLER

Quercus boyntoni Beadle was discovered near the summit of Lookout Mountain in Etowah County, Alabama, in 1900. Beadle (1901) named the plant after its collector and the species was recognized subsequently by Small (1913, 1933) and by Trelease (1924). Sargent (1918) reduced it to the status of a variety of *Q. stellata* Wang., stating that "the dwarf habit of this little oak is due probably to the exposed position and high altitude where it grows."

In 1942 there first came to my attention a series of specimens of a dwarf oak collected in 1934 in Angelina County, eastern Texas, by Effie Boon and by B. C. Tharp. The distinction between this and *Quercus stellata* was obvious, but the disposition of the Angelina County plant posed a problem, especially in the light of shrubby forms of other tree species known to occur in the prairie regions of Texas. Its segregation appeared unwise without a study of the plant in the field. Consequently, in my treatment of the oaks of Texas (1951) these specimens were included in *Q. stellata*. It is to this inclusion that the description of *Q. stellata* owes such characters as "small shrubs" and "leaves . . . obtriangular . . . bases cuneate . . . blades undulately . . . 2- to 4-lobed." The Boon collection cited from Angelina County under *Q. stellata* should have been identified as *Q. boyntoni*.

Recently I devoted an entire day in the field in Angelina County to a search for *Quercus boyntoni* and a study of its distribution compared with that of the related species. This was followed by a study of borrowed specimens of this species from the United States National Herbarium, including the Biltmore series and the Charles Mohr collection containing some Boynton specimens upon which Beadle based his original description. For this loan I am deeply indebted to the curator. All the Alabama specimens cited are deposited in the United States National Herbarium, while the Texas specimens cited are in my private herbarium. Duplicates of my own collections have been sent to the United States National Herbarium and otherwise distributed.

There follows an amplified description of *Quercus boyntoni* based upon both Alabama and Texas specimens. It should be emphasized that this description might as well have been drawn from one population as the other, so similar are the two.

QUERCUS BOYNTONI Beadle, Biltmore Bot. Studies 1:47. 1901. *Quercus stellata* var. *boyntonii* Sarg., Bot. Gaz. 65:437. 1918.

Rhizomatous shrubs 20 cm. to 3 m. tall (or 5 m., *vide* Beadle), trailing or sometimes semi-erect; twigs 1.5–3 mm. thick, densely fulvous-tomentulose with a mixture of simple appressed glandular hairs and moderately spreading stellate hairs, the pubescence darkening and persisting through the second season; buds 2–3 or even 4 mm. long, ovoid, acute or sometimes rounded, russet, sparsely pubescent; stipules deciduous, 3–5 mm. long, subulate, sparsely hairy; leaves deciduous or subevergreen, thin and rather soft, 5–10 (12) cm. long, 2–6 or rarely 8 cm. broad, cuneate to oblanceolate, obovate or oblong, characteristically roundly 3-lobed at the broad apex or sometimes 5-lobed above the entire cuneate base, margins minutely cartilaginous-revolute, upper surface glossy, in youth sparingly glandular-puberulent and with scattered stellate hairs, at length glabrate or the stellate pubescence persistent especially about the midrib, lower surface dull, persistently fulvous-glandular-puberulent and stellate-pubescent or the pubescence silvery, the veins about 6 to 8 on each side, very irregular and with some intermediates, those passing into the lateral lobes very prominent, slightly raised above and prominently so beneath, markedly and irregularly branching and anastomosing; petioles 5–10 mm. long, moderately slender, persistently pubescent like the twigs; staminate catkins 3–6 cm. long, fulvous-glandular-puberulent and stellate-pubescent, the puberulent anthers well-exserted from the ciliate perianth; pistillate catkins about 5 mm. long, about 3-flowered, and sessile, densely fulvous-pubescent; fruit annual, solitary or paired on peduncles 2–10 or rarely even 35 mm. long; cups 10–13 mm. broad, 5–10 mm. high, deeply cup-shaped or more shallow, the scales densely fulvous- or silvery-tomentulose, the bases moderately or markedly thickened, the thin apices closely appressed, the acorns 10–17 mm. long, 7–10 mm. broad, broadly or narrowly ovoid, the ends broadly rounded, brown and minutely puberulent especially about the apex, about one-half or only one-third included.

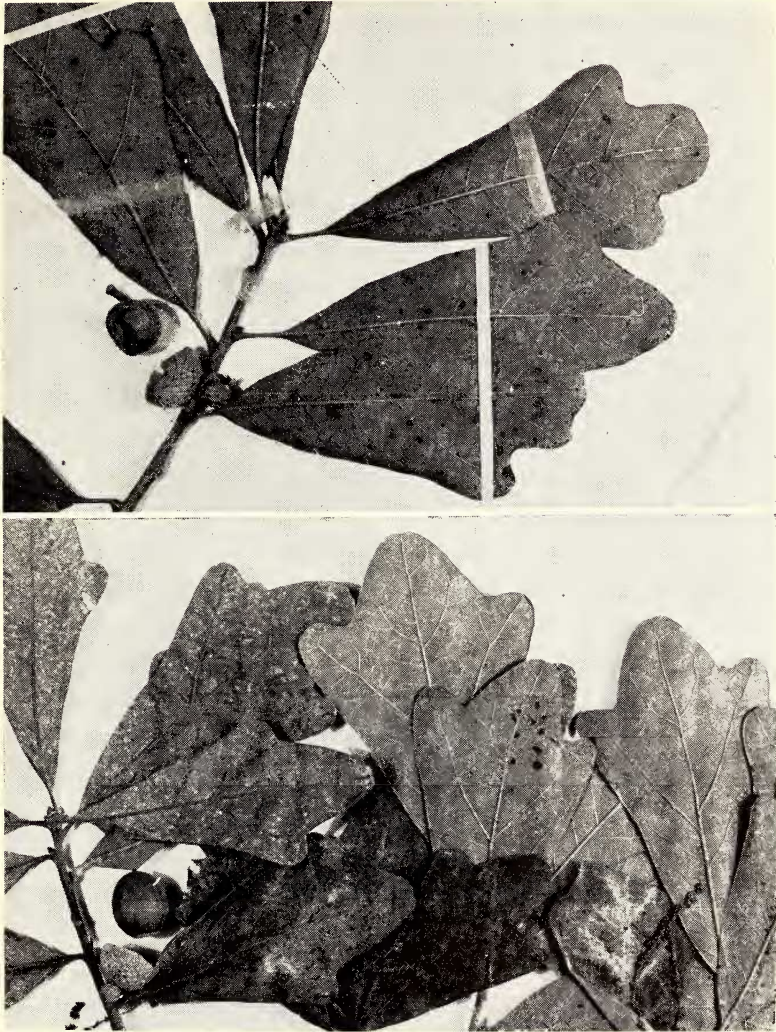


FIG. 1 (top). *Quercus boyntoni* Beadle, the lectotype specimen from Etowah County, Alabama, C. L. Boynton s. n., sheet no. 780302, US. FIG. 2 (bottom). *Quercus boyntoni* Beadle, a typical specimen from Angelina County, Texas, C. H. Muller 9609.

Specimens examined. ALABAMA: Etowah County, about summit of Lookout Mountain, near Gadsden, May 1900, *C. L. Boynton s. n.* (Herb. Chas. Mohr); July 29, 1900, *C. L. Pollard* and *W. R. Mazon 339*; September 1, 1900, *Boynton s. n.* (lectotype); April 1901, *T. G. Harbison s. n.*; April 26, 1901, *collector unknown 1905* (Biltmore Herb.); October 12, 1901, *collector unknown 1905a* (Biltmore Herb.); September 25, 1902, *collector unknown 1905c* (Biltmore Herb.). Jefferson County, glades along Lost Creek, Shades Mountain, near Birmingham, April 18, 1931, *E. J. Palmer 38946*. TEXAS: Angelina County,¹ "Charlie Massengill's Farm," August 15, 1934, *E. Boon 473*; August 16, 1934, *Boon 492*; September 16, 1934, *Boon s. n.*; Shawnee Switch, September 16, 1934, *B. C. Tharp s. n.*; 1 mi. W. of Shawnee Creek, 2 mi. E. of Shawnee Store, Shawnee Prairie, 9.5 mi. S.W. of Huntington, August 26, 1953, *C. H. Muller 9609, 9610, 9611*.

The Alabama collections taken in the first years of the century are singularly lacking in certain data. The Biltmore specimens, of course, do not bear the collectors' names. "Black Creek near Gadsden" is mentioned on a Charles Mohr label with a plant apparently collected by Boynton and appearing on the same sheet with another Boynton collection. Another Mohr sheet bears the only reference to habit—"trailing shrub not over 2 feet high"—written in pencil on a crude label and accompanying a duplicate of Boynton's collection of May 1900. These Mohr herbarium specimens seem to be the only examples of Boynton's collections extant. One of them (US no. 780303) bears the notation "Biltm. herb." Another (US no. 780302) is here chosen as the type on the grounds that it is the only mature specimen of Boynton material available and was seen by Beadle prior to the publication of the species. Beadle refers to Boynton collections in April and October of 1900, but only May and September collections appear. The Biltmore herbarium contains no Boynton material at all.

Small (l. c.) describes the range of *Quercus boyntoni* as extending along ridges in the Alleghany Valley into Georgia. I have not seen any specimens of this species from Georgia, but its occurrence there would be expected.

The yellow pubescence on the lower leaf surface, referred to by Sargent, may be due to the age of the dried specimens. The 1934 collections from Texas match those of Alabama taken in 1900 and 1901. The 1953 Texas collections have (at the date of writing) a more silvery pubescence that may yellow with age.

That *Quercus boyntoni* and *Q. stellata* are closely related is clearly indicated by the similarity of the fruit, puberulence of anthers, and the dense almost mealy puberulum or tomentulum of the twigs. That they deserve specific distinction, however, is equally plain. The shrubby habit of *Q. boyntoni* is not in any way related to the growing conditions. Neither the elevation of the Lookout Mountain site (300 m., *vide* Beadle) nor Sargent's reference to "in the shelter of narrow glades" indicates the de-

¹ The occurrence in Angelina County, Texas, of a community named Boynton located a few miles from the Shawnee localities is purely coincidental and in no way related to the name of the species, which was derived from that of its first collector in Alabama.

gree of altitude and exposure that constitutes a rigorous habitat. A normally erect tree species such as *Q. stellata* (however small of stature in its xeric western range) is not changed by such moderate rigor to a sprawling rhizomatous shrub as little as 20 cm. tall at maturity. The even lesser stature of the lowland Texas population of *Q. boyntoni*, growing at about 60 m. elevation, further emphasizes the genetic nature of this character. The leaf shape and thin texture of the blades of *Q. boyntoni* are constant characters in which it differs further from *Q. stellata*.

Although most of the collectors' references to site conditions in the Alabama populations have stressed "shallow soil," the Texas plant occurs on a deep sandy soil in the valley of a creek. The species was found by Boon and Tharp out on Shawnee prairie and in other prairie locations, but I failed to find it except in the shelter of forest.

In the Texas population *Q. boyntoni* occurs under *Pinus taeda* and *Liquidambar styraciflua* mixed with arboreal *Q. drummondii* Liebm. Although there is some little evidence of hybridization of *Q. boyntoni* with *Q. drummondii* (Muller 9605, 9607), the shrub species occurs abundantly in pure form associated with the tree species equally free of hybridity. Furthermore, saplings of the tree species were noted as erect plants, showing neither the trailing habit nor the leaf characters of *Q. boyntoni* (Muller 9606). The surrounding clay and gravel hills are abundantly populated by typical *Q. stellata* which is not found on deep sand (Muller 9604).

An inconspicuous dark green shrub trailing down banks and mixed with shrubs of taller stature is easily overlooked, especially if its fruit is hidden by the leaves and its leaf form is sufficiently similar to surrounding trees to cause it to be taken for a seedling of these. It is therefore unlikely that the full distribution of *Quercus boyntoni* is indicated by the available herbarium specimens. In fact, Mrs. Boon indicated (manuscript map in personal communication) four localities in Angelina County in which she had encountered *Q. boyntoni*, one in the Shawnee Creek drainage and the other three in the Biloxi (Balaxy) Creek drainage. One locality in each drainage is authenticated by specimens here cited. Between Texas and eastern Alabama there very possibly exists a number of sandy creek valleys similar to that of Shawnee Creek in which *Q. boyntoni* may be found.

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